MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

MMA2013 – INTERACTION DESIGN

(All sections / Groups)

21 OCTOBER 2016
9.00 a.m. - 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **NINE** pages.
2. Answer all questions in **Section A.**
3. Answer **TWO** of the **THREE** questions in **Section B.**
4. Answer **THREE** of the **FOUR** questions in **Section C.**

SECTION A [15 MARKS]

Instructions: Answer all questions in this section.

QUESTION 1 [5 MARKS]

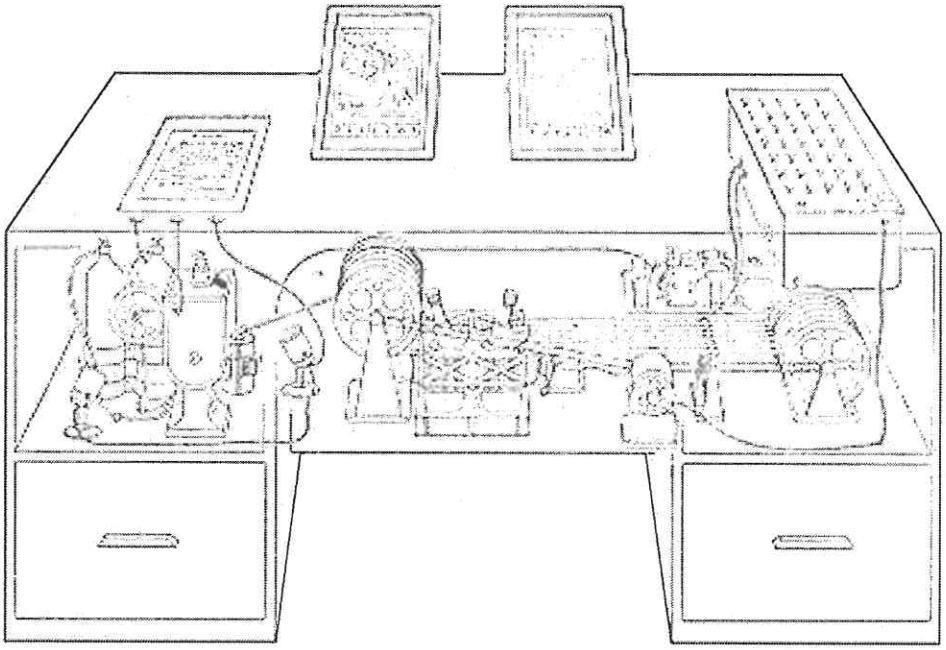

Figure 1. An information machine by Vannevar Bush

1. What is the name of the machine in Figure 1? (1 marks)

2. Which of the following explanations is **wrong** about this machine? (2 marks)
   A. This was the market-ready product as an information processing machine based on the idea of electronic linking of material
   B. It was a personal workstation that enabled a professional to quickly index and retrieve documents or pictures and create hypertext-like associations among them.
   C. Microfilm was a storage medium.
   D. The target customers were FBI and CIA.

3. What was the limitation of this machine? (2 marks)

Continued ...

QUESTION 2 [5 MARKS]

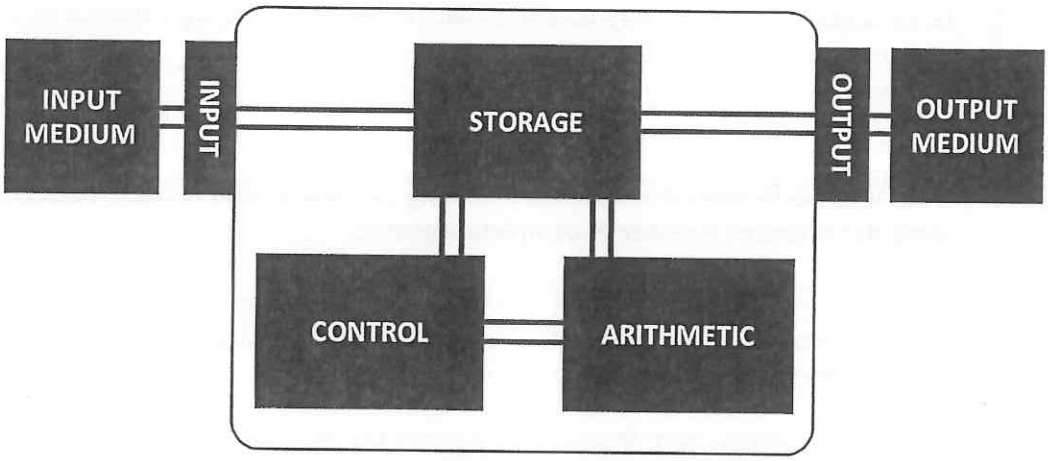

Figure 2. A framework of computer from a video, *How a computer works* (AT&T video archive, 1962)

1. What are the two fundamental calculations in electronic digital computer enabled by binary number system?

(1 marks)

   A. Conditional and batch calculations
   B. Iterative and singular calculations
   C. Analytical and heuristic calculations
   D. Logical and arithmetic calculations

2. Which of the following explanation is **wrong** about each sections in Figure 2?

(2 marks)

   A. Control section reads and writes the necessary data on storage section.
   B. Control section is a timing and gating system for transferring data.
   C. The instruction will be stored on control section.
   D. When the problem worked out control roots the result to the output device.

3. What is the difference between ***output*** and ***output medium*** in Figure 2? (2 marks)

Continued ...

QUESTION 3 [5 MARKS]

1. To compare with previously invented machines what is the significance of digital computer in the viewpoint of human labor replacement? Answer in complete sentence.

(2 marks)

2. What is the difference between time-sharing processing and batch-processing in computer science? Answer in complete sentence.

(1 marks)

3. Which of the following explanation is **wrong** about the changes made in 1980's in interaction design field?

(1 marks)

   A. IBM system 360, Xerox Star, Apple Lisa announced.
   B. For the first time, companies targeted significant numbers of non-technical hands-on users who received little or no formal training.
   C. The price of computers fitted into the budget of a small workgroup or an office.
   D. The necessity of psychologist in designing human-computer interaction accepted widely in computer and telecommunication companies.

4. Which of the following explanation is **wrong** about discretion in human-computer interaction?

(1 marks)

   A. It requires steady progress in understanding the psychology of users and their tasks.
   B. The versatile software is necessary.
   C. Computer is congenial and provides multiple choices based on users' goal.
   D. Low performance computer for personal users was compatible with the state-of-art HCI technology.

Continued ...

SECTION B [10 MARKS]

Instructions: Answer **only 2 questions** in this section.

QUESTION 1 [5 MARKS]

1. Match the name and each person's major contribution towards interaction design. (3 marks)

	Contributor	Contribution
A	**Ivan Sutherland**	**i. NLS**
B	**Ted Nelson**	**ii. Sketchpad**
C	**Douglas Engelbart**	**iii. Man-computer symbiosis**
D	**J.C.R Licklider**	**iv. Hypertext**

2. Which of the following explanation is **correct** about the actors in interactive art proposed by Katja Kawastek? (2 marks)
   A. The recipient creates interactive artwork.
   B. One of the artist's primary intention is to behave in the interest of his own experience.
   C. The artist creates by configuring the required setting not to relinquish total control.
   D. The recipients' behavior will not necessarily always correspond to the artist's expectations.

QUESTION 2 [5 MARKS]

Interaction design requires understandings on
i. User's personal ***a.*** _____ than their ***b.***_____.
ii. ***c.***_____ principles (on users) than aesthetics and forms
iii. ***d.***_____ approach

Table 1. Required understandings on interaction design by Alan Cooper

1. Which of the following pair is **correct** for the blanks, *c* and *d* in table 1? (2 marks)
   A. c. visual — d .systematic
   B. c. cognitive — d .systematic
   C. c. analytic — d .aesthetic
   D. c. cognitive — d .visual

2. What is the difference between the blanks *a* and *b* in table 1? (3 marks)

Continued ...

QUESTION 3 [5 MARKS]

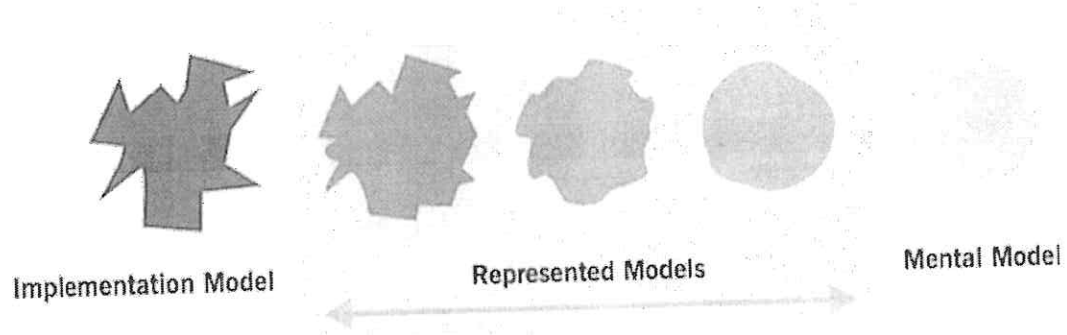

Figure 3. Mental model and implementation model

1. What is the difference between ***mental model*** and ***implementation model***?
(2 marks)

2. What is the reason that ***represented models*** and ***implementation model*** should be different?
(3 marks)

Continued ...

SECTION C : ESSAY [15 MARKS]

Instructions: Answer **only 3 questions** in this section.

QUESTION 1 [5 MARKS]

Para.

1

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GOAL: EDIT-MANUSCRIPT
.     GOAL: EDIT-UNIT-TASK ... repeat until no more unit tasks
.     .     GOAL: ACQUIRE UNIT-TASK
.     .     .     GOAL: GET-NEXT-PAGE ... if at end of manuscript page
.     .     .     GOAL: GET-FROM-MANUSCRIPT
.     .     GOAL: EXECUTE-UNIT-TASK ... if a unit task was found
.     .     .     GOAL: MODIFY-TEXT
.     .     .     .   [select: GOAL: MOVE-TEXT* ...if text is to be moved
.     .     .     .         GOAL: DELETE-PHRASE ...if a phrase is to be deleted
.     .     .     .         GOAL: INSERT-WORD] ... if a word is to be inserted
.     .     .     .     VERIFY-EDIT

*Expansion of MOVE-TEXT goal
GOAL: MOVE-TEXT
.     GOAL: CUT-TEXT
.     .     GOAL: HIGHLIGHT-TEXT
.     .     .       [select**: GOAL: HIGHLIGHT-WORD
.     .     .                  .   MOVE-CURSOR-TO-WORD
.     .     .                  .   DOUBLE-CLICK-MOUSE-BUTTON
.     .     .                  .   VERIFY-HIGHLIGHT
.     .     .                  GOAL: HIGHLIGHT-ARBITRARY-TEXT
.     .     .                  .     MOVE-CURSOR-TO-BEGINNING        1.10
.     .     .                  .     CLICK-MOUSE-BUTTON              0.20
.     .     .                  .     MOVE-CURSOR-TO-END              1.10
.     .     .                  .     SHIFT-CLICK-MOUSE-BUTTON        0.48
.     .     .                  .     VERIFY-HIGHLIGHT]               1.35
.     .     GOAL: ISSUE-CUT-COMMAND
.     .     .     MOVE-CURSOR-TO-EDIT-MENU                          1.10
.     .     .     PRESS-MOUSE-BUTTON                                0.10
.     .     .     MOVE-CURSOR-TO-CUT-ITEM                           1.10
.     .     .     VERIFY-HIGHLIGHT                                  1.35
.     .     .     RELEASE-MOUSE-BUTTON                              0.10
.     GOAL: PASTE-TEXT
.     .     GOAL: POSITION-CURSOR-AT-INSERTION-POINT
.     .         MOVE-CURSOR-TO-INSERTION-POIONT                     1.10
.     .         CLICK-MOUSE-BUTTON                                  0.20
.     .         VERIFY-POSITION                                     1.35
.     .         GOAL: ISSUE-PASTE-COMMAND
.     .         .     MOVE-CURSOR-TO-EDIT-MENU                      1.10
.     .         .     PRESS-MOUSE-BUTTON                            0.10
.     .         .     MOVE-MOUSE-TO-PASTE-ITEM                      1.10
.     .         .     VERIFY-HIGHLIGHT                              1.35
.     .         .     RELEASE-MOUSE-BUTTON                          0.10
                                    TOTAL TIME PREDICTED (SEC)     14.38
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Continued ...

2

Description	Operation	Time (sec)
Reach for mouse	H[mouse]	0.40
Move pointer to "Replace" button	P[menu item]	1.10
Click on "Replace" command	K[mouse]	0.20
Home on keyboard	H[keyboard]	0.40
Specify word to be replaced	M4K[word]	2.15
Reach for mouse	H[mouse]	0.40
Point to correct field	P[field]	1.10
Click on field	K[mouse]	0.20
Home on keyboard	H[keyboard]	0.40
Type new word	M4K[word]	2.15
Reach for mouse	H[mouse]	0.40
Move pointer on Replace-all	P[replace-all]	1.10
Click on field	K[mouse]	0.20
Total		**10.2**

Source: "GOMS and Keystroke-Level Model." Accessed August 15, 2016. http://www.cs.umd.edu/class/fall2002/cmsc838s/tichi/printer/goms.html.

1. Referring to paragraph 1 and 2 discuss the limitation of GOMS model in comparison with KLM model.

(5 marks)

Continued ...

QUESTION 2 [5 MARKS]

Para.

3 Rather than speaking of solving in the context of wicked situations, the convention is to speak of positive change as taming. Taming wicked situations requires the acknowledgment of the need for *framing*—the subjective look at situations from a perspective that is only one possibility of many. The value of one frame above another is guidance to an effective path forward, usually through a frame's power to explain why the system behaves as it appears to. This is a form of taming complexity through language (von Foerster, 1984). Framing must support objective facts but only by being explicit about the values that forefront some "facts" above others. Fundamentally, it must create an argument for some design approaches above others— the design rationale. Systems dynamics and even first-order cybernetics are not enough:

Source: Dubberly, Hugh. "Cybernetics and Design: Conversations for Action." *Cybernetics & Human Knowing* 22, no. 2–3 (2015): 73–82.

1. With reference to paragraph 3 discuss the recommendable design approach in terms of second-order observation. (5 marks)

QUESTION 3 [5 MARKS]

Para.

4 It is this: software does not reveal itself through external form—something mechanical devices tend to do. And in software, the cost of adding one more new feature is almost nothing, whereas adding features to mechanical devices almost always increases their cost. Cooper argues that software is thus less constrained by negative feedback acting to limit complexity than mechanical devices have been. The result is pure Rube Goldberg: software with feature piled upon feature. The trouble is that each incremental feature makes a product *more* difficult to use. That leaves us with products that are increasingly hard to use—and with growing frustration as we try to use them.

Source: Dubberly, Hugh. "Alan Cooper and the Goal Directed Design Process." *American Institute of Graphic Arts Journal of Design for the Network Economy*, 2001, 01–15.

1. With reference to paragraph 4 discuss the reason why goal-oriented design is necessary in Alan Cooper's viewpoint. (5 marks)

Continued ...

QUESTION 4 [5 MARKS]

Para.

5 The lawyer has at his touch the associated opinions and decisions of his whole experience and of the experience of friends and authorities. The patent attorney has on call the millions of issued patents, with familiar trails to every point of his client's interest.

Source: Bush, Vannevar. "As We May Think." *The Atlantic*, July 1945. http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/.

6 Finally, CHI has gradually become more open to work that takes a social or political stance. Accessibility was first addressed in the context of physical constraints. Socioeconomic factors were included in Universal Usability conferences in 2000 and 2003.

Source: Jacko, Julie A., ed. *Human Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications, Third Edition.* 3rd ed. Taylor & Francis, 2012.

1. With reference to paragraph 5 and 6 discuss and give your own opinion about the reason why the research on interaction design needs to be inter or multidisciplinary.

(5 marks)

End of Paper.